Frias L., D. and Lamborot CH., M. 
University of Chile, Santiago, Chile. 
Mating activity, sexual isolation and temperature in the "yellow", "white" 
and wild type strains of D. gaucha.

The object of the present work was to study the 
effect of temperature on mating activity and 
sexual isolation in two mutant strains of D. 
gaucha, "white" and "yellow" in relation to a 
 heterogeneous wild type stock from which the 
mutants arose spontaneously a few years ago 

Sexual activity and isolation was analyzed by direct observation for a period of two 
hours in mating chambers designed by Ellens and Wattiaux (DIS 39: 118, 1964). 15 wild type 
pairs were placed in one chamber with 15 males and 15 females of either the "yellow" or the 
"white" strains. The experiments were performed under uniform illumination, at 16°C and 25°C. 

The results from the study of 40 observations of each type (600 pairs) are summarized in 
the Table. It shows the number of matings, and the statistical significance of the differ-
ences in mating of different types at both temperatures.

In general, the wild type males are the most active at both temperatures, as they inseminate 
more females than any of the mutant males. "White" males are very little active at 16°C 

<table>
<thead>
<tr>
<th>Type of cross</th>
<th>16°C</th>
<th>25°C</th>
<th>16/25°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>‡ n x ♀ n</td>
<td>57</td>
<td>104</td>
<td>17.962</td>
</tr>
<tr>
<td>‡ n x ♀ w</td>
<td>96</td>
<td>96</td>
<td>0.007</td>
</tr>
<tr>
<td>‡ w x ♀ n</td>
<td>4</td>
<td>4</td>
<td>0.126</td>
</tr>
<tr>
<td>‡ w x ♀ w</td>
<td>2</td>
<td>2</td>
<td>0.168</td>
</tr>
<tr>
<td>‡ n x ♀ ♀</td>
<td>52</td>
<td>101</td>
<td>20.209</td>
</tr>
<tr>
<td>‡ n x ♀ y</td>
<td>62</td>
<td>102</td>
<td>12.786</td>
</tr>
<tr>
<td>‡ y x ♀ n</td>
<td>30</td>
<td>52</td>
<td>2.705</td>
</tr>
<tr>
<td>‡ y x ♀ y</td>
<td>34</td>
<td>49</td>
<td>6.229++</td>
</tr>
</tbody>
</table>

n = wild type 
w = white 
y = yellow 
+ = 0.001 
++ = 0.02-0.01

and 25°C, both in relation to their own, as well as to the wild type females. On the other 
hand, "white" females are highly receptive at both temperatures. The receptivity of "yellow" 
and wild type females is increased significantly at higher temperatures.

As has been described for other species, the activity of males and the receptivity of 
females are in inverse relationship, a fact that is specially noteworthy in the low activity of 
the "white" males and great receptivity of the "white" females. These differences must be 
attributed mainly to the mutation, as the genetic background in the three strains is the same.

The behavioral changes of the "white" and "yellow" mutations in D. gaucha follow a 
similar pattern to those described for other phylogenetically quite distant species, such as 

The mechanisms by which these mutations modify sexual behavior and discrimination in 
relation to temperature, must be analyzed in the future.

Valentin, J. University of Stockholm, 
Sweden. How much crossing-over occurs 
within heterozygous inversions?

This has been tested by Sturtevant and Beadle 1936 and by Novitski and Braver 1954, and using 
X chromosome inversions these authors find a 
general decrease of crossing-over within the 
loop (especially near breakpoints). On the 
other hand, heterozygous inversions can enhance recombination, not only in heterologous biva-
lents but also in the inversion chromosome outside the inversion. We wondered whether 
under particularly suitable conditions, this Schultz-Redfield effect might even act in the 
middle of an inversion loop. Observation of such intra-inversion effects would have a bearing 
on hypotheses about the cause of the Schultz-Redfield effect. Such suitable conditions might 
be expected with In(2LR)Gla, a reasonably symmetric pericentric inversion, superimposed on an